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EPITHELIAL CARCINOMA.

An Abstract of Koester's (of Würzburg) recent Researches into its Nature. By EDWARD WIGGLESWORTH, M.D. Read before the Boston Society of Medical Sciences, Jan. 3, 1871.

IN the fortieth volume of *Virchow's Archiv*, I published some investigations into a form of tumor which I called "canceroid with hyaline degeneration," and showed that it was developed from the epithelium of the lymph vessels. I can show the same now for canceroid generally, but as this is not to be distinguished from cancer I prefer to designate it by the term epithelial carcinoma. In this group I include cancers of the buccal mucous membrane and conjunctiva, these being nearly always epithelial. The doubt ever increasing as to what we are to call "canceroid" shows its artificial separation from cancer. The more exact our researches histologically, and the more we regard relatively younger stages of development, the less difference we notice between the two. Canceroid originally designated a benignant new formation in the skin, of a warty character; although Virchow* insisted that a papillary growth should be called canceroid only when within the diseased tissue or organ alveoli are formed which become filled with cells of an epidermoidal nature, the malignancy being dependent upon the association of the two changes. Gradually the importance of the former change became disregarded, and the change in the interior of the tissues considered as of primary importance, even according to Virchow, who alleges in support of his opinion the primary appearance of canceroid in bone.

A slight portrayal of the present condition of things and of my position in reference to the latest views upon cancer is all that I shall here attempt. An exhaustive examination of the nature of cancer and sarcoma, with an enumeration and careful

revision of the literature thereto appertaining, I leave for two standard works, which are already occupied with this subject, viz., the last volume of Virchow's "tumors," and Lücke's elaborate treatise on tumors in v. Pitha's and Billroth's hand-book of surgery. To these may be added the various views in regard to the development of cancer collated by Naunyn, and with special reference to cancer of the skin, that most comprehensive treatise of Thiersch.

Simultaneously, however, with the adoption of these views, we break down the barrier between canceroid and carcinoma, since we find also in the tissues of the latter, cavities and alveoli filled with epithelial cells.* If Virchow† still holds to a difference between canceroid and carcinoma, while confessing that there are no settled boundaries to the two, he does it rather out of practical, i. e., clinical considerations, "since the canceroid is rarely, while cancer is usually, generalized." He considers, also, that in carcinoma the epithelial cells are contained in the meshes of a "newly-formed frame-work of connective tissue, which contains also vessels," while canceroid infiltrates only an old tissue. This, however, at least for cancers of an early period of development, is at variance with the views in regard to their development from connective tissue, according to which the commencement of both tumors must be the same.

Förster‡ states a further difference, viz., that in cancer there exists neither a fixed form nor arrangement of the cells, and that the cells are separated by an intercellular fluid, whereas in canceroid the arrangement of the cells is typically pronounced, and their form that of flat or cylinder epithelium cells, which, moreover, are cemented together.

Cornil, Ranvier§ and Demoncey,|| while regarding both carcinoma and canceroid as epithelial tumors, "tumeurs hétéradéniques"

* Virchow's Archiv, Bd. I. p. 105.

† Cellular pathologie, 3 Aufl. p. 449.

‡ Handb. d. Path. Anat., 2 Aufl. p. 388 ff u. p. 421 ff.

§ Cornil, Journ. de l'Anat. et de la Phys., 1864 et 1865, et Cornil et Ranvier, *ibid.* 1866.

|| L'épithéliome pavimenteux. Paris, 1867, p. 9.

[WHOLE No. 2242]

* Ueber Canceroid und Papillargeschwulst. Würzb. Verh. Bd. I., p. 106. Ges. abh. p. 1018.

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in the sense of Robin, hold nevertheless similar views. "Le carcinom est une tumeur formée d'un stroma fibreux dans les alvéoles duquel sont continües des cellules non sudées entre elles. D'autre part, l'épithéliome pavimenteux ou cancroïde est constitué par du tissu épithélial soutenu ou non par un stroma fibreux." These various differences have, however, never been fully recognized.

The practical results of this uncertainty in diagnosis are shown in the opinions with regard to the malignancy of cancrroid, which malignancy has been ascribed with every successive year to an ever increasing number of cases of cancrroid, simply because cancers were included. Thus, according to O. Weber,* the proportion of malignancy in cancrroid is 36.5 per cent.; according to Thiersch,† however, more than 50 per cent. result in death from return of the epithelioma. After the work of Thiersch appeared, in which he substitutes for cancrroid the old term epithelial carcinoma, it was necessary to be more exact, since histogenesis separated necessarily an epithelial from a connective tissue cancer, whereas if the epithelial nature of cancer cells is alone regarded, this must inevitably lead to the opinion recently pronounced by Waldeyer,‡ viz., that no difference exists between cancer and epithelial cancer, which opinion is properly merely a consequence of the theory of Thiersch and Remack with regard to the origin of epithelial formations. By an entirely different route I have arrived at the same conclusion, i. e., that there is no specific difference between cancrroid and cancer, yet though I include cancrroid under cancer, I am far from stating that all cancers are identical.

Formerly it was the general opinion that epithelial carcinoma was developed from the glandular organs of the skin, though anatomical proof was never offered.§ Then came Virchow's work on the connective tissue, parenchymatous inflammation, and new formations, and immediately everyone, especially Weber, Förster and Billroth, espoused the theory that cancer was developed from connective tissue. His work was so plausible that a hypothesis advanced in 1854 by Remack|| has been nearly forgotten. This was, that all epithelial formations must be developed from epithelial germs, just as, in the embryo, the skin,

mucons membrane and gland epithelium can only come from the two boundary membranes, the horny and the intestinal gland membranes. Remack admitted that he could not furnish the proof for the epithelium of the urogenital apparatus; this has, however, been done recently by His and Hensen, and since we know that under normal conditions connective tissue [middle germ membrane] does not possess the power of forming epithelium [horny membrane], it is improbable that other histogenetic laws prevail for pathological processes than for normal ones. Opposed to this is the fact that granulating sores cover themselves with epithelium formed from the connective tissue,* though Thiersch† thinks the formation is always from the epithelial periphery inwards.

Billroth‡ next espoused this theory of Remack and Thiersch, disregarding his own previous labors and following the hypothesis of Hoffman§ that cells from the rete Malpighi could wander to other parts of the body. Waldeyer|| next appears, and, going farther than all the others, attributes to all cancers an epithelial origin. Opposed to these views are those of His¶ with regard to the separation of true and false epithelium, or endothelium, which have at least this in their favor that they are based upon the actual development rather than on the various appearances of the epithelium. Nannyn** describes the development of cancer and cancrroid as if from the epithelium of the gall-ducts. Langhans†† gives cancer of the lungs a double plan of development, from the epithelium of the alveoli and also from connective tissue. O. Weber,‡‡ while adhering to Virchow's views, thinks that the glands of the skin play a greater part than is generally conceded. So also Rindfleisch.§§ Klebs||| makes a supposition which is strange indeed, but which, nevertheless, may go far towards clearing up many histogenetic processes now involved in obscurity. He says the original formation of epithelial cancer is from epithelium; its development, however, is due to the infection of connect-

* J. Arnold. Mediz. Centralbl., 1867, No. 9.

† V. Pitha u. Billroth's Handbuch d. Chir., Bd. ii. 2, 2 Hft.

‡ Langenbeck's Archiv, Bd. vii. p. 848 u. p. 860.

§ Ueber Contractilitätsvorgänge im vordern Epithel der Froschcornea. Berl. Dissert., 1868.

|| Virchow's Archiv, Bd. xii. p. 470.

¶ Die Haute und Höhlen des Körpers. Basel, 1865.

** Archiv für Anat. und Physiol., 1866.

†† Virchow's Archiv, Bd. xxviii. p. 497.

‡‡ Chirurg. Erfahr. Berlin, 1859, p. 343, u. Krankh. d. Gesichts in v. Pitha's u. Billroth's Handb. der Chir., Bd. iii., Lfg. 2, p. 115.

§§ Lehrb. d. pathol. Gewebelehre, Lfg. i. p. 100.

||| Virchow's Archiv, Bd. xxxviii. p. 212.

* Chirurg. Erfahr. Berlin, 1859, p. 307.

† Der Epithelialkrebs namentlich der Haut. Leipzig, 1855, p. 305.

‡ Virchow's Archiv, Bd. xli., p. 470 ff.

§ Thiersch's Epithelialkrebs, p. 18-30.

|| Deutsche Klinik, 1854, p. 170.

ive tissue by epithelial germs; basing his assumption upon the observations of Recklinghausen with regard to the participation of two different individuals in the production of cells [conjugation]; and to this unnatural and unlawful coition he thinks may be attributed the strange parasitic formations called tumors.

These German opinions seem to be too exclusive for the French school. Cornil,* Ranvier,† and Demonchy,‡ hold that the cancer is an epithelial new formation, which, however, may arise both from glands and from connective tissue. The lymph vessels have thus far been regarded as merely paths for the hiding away of primary cancer, or, more recently still, as paths for its dissemination. The nearest approach to a reference to any direct relation between cancer and lymph vessels is perhaps where Virchow§ cites and criticizes some passages from Broussais,|| though even here it is doubtful if Broussais refers cancer to an inflammation of the lymph capillaries. The following passage is the one tending most especially in this direction: "Dans ces cas, que nous avons déjà notés (suppuration du tissu cellulaire), l'inflammation se perpétue dans les capillaires sanguins. Il en est d'autres où elle semble bornée aux capillaires blancs, indépendamment de l'affection simultanée des glandes et des faisceaux lymphatiques; c'est du moins ce que j'ai cru devoir conclure de l'examen de ce genre d'altération qui a reçu des modernes les noms de tissu lardacé, tissu squirrheux, ou encéphaloïde." But even here it is only a participation of the lymph vessels which is spoken of. The first to actually point out the real connection between cancer and the lymph vessels was Recklinghausen.¶ He assumed that the canceroid cylinders [canceroidzapfen] might be only the club-like swollen ends of the lymph vessels filled with cell proliferations from the connective tissue, or a mixture of these with proliferations from the epithelium of the lymph vessels, or even the latter alone. Later, in a discourse at Würzburg** upon a tumor of the under jaw, he no longer restricts his hypothesis to the endings alone of the lymph vessels, and in this tumor and another similar one from the orbit I was actually able to prove the development from lymph vessels, and even

from the epithelium of the lymph vessels, without participation of the connective tissue.* Recklinghausen called attention also at this time to the anastomoses of the canceroid cylinders and to their cavities [Lumen] here and there recognizable, facts naturally very favorable to his hypothesis. My own observations have been made upon about forty cancers of the skin, either fresh or hardened, or treated with silver, generally in all three ways and in the most scrupulously careful manner.

In general the microscopic appearances in cancer of the skin are, I., variously formed bodies composed of epithelial cells; II., a stroma of connective tissue containing vessels, in which stroma the epithelial bodies are imbedded. In dry cancers this stroma nearly or wholly disappears: the epithelial bodies are crowded together and seem like solid masses of epithelial cells, which can nevertheless be picked apart into cancer cylinders, or into roundish bodies, in either of which we may find the "globes epidermiques," or "canceroid pearls," i. e., onion-like balls of epithelium formerly held to be essential to the diagnosis "canceroid." They are, however, often lacking, and here the cylinders consist of smaller, more succulent, polygonal, flat or cylinder cells. Cuts into the youngest part of the tumor, viz., the periphery, afford generally this appearance, and one can see that the cancer bodies are not isolated in the connective tissue stroma, but generally connected so as to form a net-work. This picture is not readily obtained with a weak magnifying power, nor from preparations made with alcohol and carmine. This net-work has been noticed also by Billroth,† Klebs‡ and Waldeyer.§

In some cancers this appearance may be found everywhere, e. g., in cancers of the eyelids, of the conjunctiva, and in rodent ulcers; in others, chiefly in the periphery, i. e., the portion most recently developed, so that the question of the development of these anastomosing cell-cylinders is really that of the development of the cancer itself. Supposing, as I do, these cell-cylinders to be changed or thrombosed lymph vessels, there are still other possibilities to be regarded, namely, I., the formation of cell bodies in the connective tissue which have grown towards each other and thus united; or II., the formation of new ducts from old glands; or III., the production of such cell-

* Jour. de l'Anat. et de la Phys., 1864-5.

† Mém. Journ., 1866.

‡ L'épithéliome pavimenteux, Paris, 1867, 2 Planches.

§ Virchow's Archiv. Bd. i. p. 118, 1847.

|| Histoire des phlegmasies, Paris, 1822, 3 Edit. p.

21 et 23.

** Graefe's Archiv für Ophthalm., 1864, Bd. xii. p. 70.

• Sitzungsber. d. phys.-med. Ges. zu Würzburg, 1865-66, xv. Sitzung.

* Virchow's Archiv. Bd. xl. p. 468 ff.

† Langenbeck's Arch., vii. p. 863, Taf. i. fig. 3 u. 4.

‡ Handb. d. path. Anat., I. fg. i. p. 103.

§ Virchow's Archiv, Bd. xii. p. 499.

cylinders from the bloodvessels. The first two I shall consider later, when I treat of the changes in the connective tissue and glands in cancer; the last deserves mention only as an unproved supposition of Stencler's,* and though in cancer we find changes in the bloodvessels, yet I have never seen its commencement take place in them.

Are the anastomosing cell-cylinders altered lymph vessels? These anastomoses are constant. That they have been overlooked is due to two causes: I., the preliminary hardening in alcohol or other media, or the employing of very different supplementary fluids and reagents in the examination of the fresh specimen; II., the general custom of making all sections of tumors perpendicularly to the surface. By the first method the most recent cell proliferations, which are also the most delicate while yet the most important, are in many cancers completely altered or even rendered invisible. Fortunately this is not a universal rule. The objections to perpendicular sections need only for their substantiation a few comparative trials on the part of the investigator. Plate I., fig. 1,† is a horizontal section from the margin of a flat epithelial cancer, and shows beautifully the cell cylinders anastomosing and passing into enlarged and thickly packed concentric bodies. Where the cancer sends knots into the subcutaneous tissue they should be freed from everything except the tightly embracing connective tissue, and a horizontal section will show how the growth of the knot pushes out the connective tissue and the lymph vessels which are still intact, causing them to arrange themselves concentrically around the knot, and pressing the lymphatic net-work more closely together. See Plate I. fig. 2. Some cancers, especially those of the eyelids and conjunctiva, and particularly when these sink deep into the orbital tissue, will show the anastomoses, no matter in what direction the cuts are made. Pl. I. fig. 6, and Pl. II. fig. 2. I would state here that the periphery where the cancer is still advancing is always the best place for examination; the flat epithelial cancers, the so called *ulcera rodentia*, the best adapted for examination; the least adapted being the fissured cancers of the lips. If we examine good preparations, Pl. I. fig. 1, 2, 5, and Pl. II. fig. 2, we obtain at once the impression of lymphatic net-work. The cell cords are of va-

riable thickness, with swollen and knot-like expansions, and meandering in their course; thick and thin cylinders are united, and the branch which connects them is now thicker and now thinner than the main trunk. Now a cord divides, uniting again perhaps farther on, and where several branches meet, we see the characteristic expansions. Above all we notice in many of the cords, especially in those where the cells radiate like cylinder cells, a very plain central channel or cavity [Lumen].

This cavity has already been remarked by Billroth, Klebs and others. Some consider it the cavity of an embryonic gland duct. This is impossible, if we are really dealing with lymph vessels. Others consider it the result of the fusing or melting of the central cells. But the character of the cavity disproves this; it is clean cut, as if bored out; the ends of the cells towards the cavity are unaltered, smooth and uncorroded; there are no remains of half-altered cells, and when the cavity possesses any contents, it is simply to all appearances a clot. The regular cylindrical arrangement of the cells also around the cavity shows it to be an original and not a subsequent formation.

As a rule, the cavity is bounded by a single layer of cells, more rarely by two or three. A greater number would intrude upon and obliterate the cavity itself, so thin are the cell-cords. Plate II. fig. 1 shows admirably a double layer, fitting each into each like the teeth of two cog-wheels. Where the layers of epithelium are not cylindrical, but flat, there is more difficulty, of course, in detecting this cavity, and it is best found by a cross-cut of the cords. This is, however, an additional proof of their origin from lymph vessels, which are generally not cylindrical tubes, but simply flat fissures, whose walls are too thin and contents too scanty to admit of any expansion. This bulging takes place after the loss of their contents and with the stiffening of their walls by the formation of cylinder cells which support themselves by mutual pressure like the stones of an arch, thus furnishing the most powerful opposition to any pressure exerted from the outside. Add to this that the vessel may be or may have long been filled with contents which prevented it from contracting and destroyed the elasticity of the surrounding connective tissue, and we see how a cell band may become a cell cord. Where it remains a band with perhaps only two layers of pavement epithelium separated by a cavity, this cavity may be proved by our having to

* Virchow's Archiv, Bd. xlii, p. 39.

† The plates referred to may be found in Koester's *Entwicklung der Carcinome*. Würzb., 1862.

shift our objective more than the width of the upper layer of cells before bringing the lower layer into view. In Plate II. fig. 5, such a band is shown, and here the epithelium assumes the spinous form [stachelzellen]. The tumor was from the bend of the knee, and the bands were too long to admit of the supposition that the contents had partially escaped anywhere, while the possibility of their being mere longitudinal cuts of a cell cylinder was disproved by the simple fact that they were bordered by connective tissue, both above and below. In this same tumor I noticed several long and even branching cell-cords separated longitudinally by a small artery, as is the case with lymph vessels.

Some authors have stated that the cell cylinders are surrounded by a membrana propria, which would be in favor of their development from glands. This error has arisen from the chemical reagents employed. For instance, by adding acetic acid to a preparation in which we have cell cylinders with radiating cells, the nuclei of the cells become darker and more evident to the eye, the protoplasm, however, clear and homogeneous, and the boundary lines of the cells nearly invisible. This protoplasm outside the outer row of cells, being distinctly bounded by the surrounding connective tissue, resembles a membrane. It is not to be isolated, however, and does not exist, and when picked apart gives up to each cell its proper protoplasm. Or, again, a small layer of the connective tissue close around the cell cylinder has become homogeneously mucous; acetic acid causes the cell cylinder to shrink, and the space left by it becomes occupied by the infiltrated and swollen connective tissue or by a glutinous substance expressed from it, and resembles a membrane. The same effect is produced by hardening in alcohol, especially when the cell cylinder has a distinct cavity, as has also been noticed by Thiersch* and others. This supports my theory, as such cell cylinders naturally could condense themselves into less volume than if they were solid, leaving the pseudo-membrane more evident. In the examination of fresh specimens the pseudo-membrane is never found.

A brief summary of the results we have thus far arrived at shows us that: I., in all cancers of the skin, and especially in their peripheral younger zones, may be found anastomosing cell cylinders; II., these anastomoses very often form a network

which in its appearance and dissemination resembles the network of lymph vessels, and seems to represent a cast of them; III., in these anastomosing cell cylinders there is frequently a round or flattened cavity, filled either with a mass which breaks the light but slightly, or with one resembling a clot; IV., in some cases bloodvessels permeate the cell cylinders; V., the cell cylinders are surrounded by no membrana propria.

Before we can be sure that these cell cylinders are merely altered lymph vessels, two more facts require proof, namely, the connection of the cancer cylinders with normal lymph vessels, and the development of the cells which fill the lymph vessels, and are produced in, upon, or instead of the walls of the same. The former I attempted to prove by means of injections through punctures, but failed, it being always the bloodvessels which became injected. I satisfied myself, however, of one thing, viz., that there was no connection between cancer cylinders and bloodvessels.

I next tried impregnation with silver, according to Recklinghausen's method. This does better if we remember that we are treating sections and not smooth membranes, and do not expect too much; for, though some tumors give a tolerable proportion of demonstrable preparations, others give but one in thirty or more.

The sections to be silvered need not be taken from a fresh tumor. Indeed, it is better to wait some hours before preparing them. Cuts should then be made from the periphery and horizontal. The silver solution should be $\frac{1}{2}$ per cent., and the sections should be left in about half a minute. While in the solution the sections should be moved about with the needle, to wash off any *débris* of cells or tissue fragments, or else gently brushed either in the solution or instantly in distilled water. If left longer in the water the cuts become worthless, and it would be better to brush them after the reduction of the silver. This last is often needful. The cuts are then to be laid in glycerine, though if put up for preservation in this they do not last. The action of the silver is the same here as everywhere. The connective tissue fundamental substance and the cement substance of the epithelial cells become uniformly brown, while the juice canals [saftkanälchen] and cells remain uncolored. The cell cords appear like bright bands in the brown stroma, showing only a fine network of brown lines, the colored intercellular cement substance of the cancer cells.

* Epithelialkrebs, p. 139.

When the anastomoses are frequent, the cancer cords resemble exactly similarly prepared lymph vessels. Pl. III. fig. 1-3.

A comparison of fresh preparations with silvered ones from the same place, is a sufficient answer to any one who may regard the cancer cords as imbedded between the lymph vessels. There is simply no room for both; they must be identical. Moreover, where the silvering is imperfect, the cancer cells may be seen through the fragments of the silver lines or even as a continuation of them. Sometimes, in spite of the coloration of the intercellular substance, the cancer cells remain visible, together with their nuclei.

The best method to show the identity of the cancer cords and the lymph vessels is simply to remove a preparation from the silver solution and let it color itself under the microscope; the cells fade gradually from sight and the intercellular substance becomes bright, then gray or violet and finally brown. We find that the great epithelial cells of the lymph vessels are gone or altered; we find between the cancer cylinders only bloodvessels, never any lymph vessels, showing the cancer cords to be the altered lymph vessels; we find the arrangement of these silvered cancer cords corresponding to that of the lymph vessels, especially in the uppermost layer of the cutis, where they become thinner and send out terminal shoots into the papillae, Pl. III. fig. 4; and also in their relations to the bloodvessels, with which they run parallel or over which they form bridges; and not unfrequently we find the smaller epithelial cells actually becoming larger, the silver lines growing clearer, more uniform, thinner, more deeply colored and meandering, till at length before our very eyes lie the large, long, polygonal or rhombic cells with wavy margins, just as in normal lymph vessels. This transition into normal lymph vessels may be gradual, Pl. III. fig. 3 a-c, or sudden, Pl. III. fig. 5 and 7, the latter showing a lymphatic loop in a papilla of the skin; and with this transition the cancerous degeneration, dark from the thickness of the cells, becomes clear and bright and white. Nor only in the proliferations of the cancer cords, sometimes even in the middle of their course, we observe places where the cancerous degeneration has not yet occurred. Pl. III. fig. 3 b. This is, moreover, no example of one sort of cells covering and concealing another, but an actual substitution, the very thin scales of lymph vessel epithelium losing in length and width what they gain in thickness as

they swell by the absorption of fluid, and taking on all sorts of epithelial forms from their mutual pressure.

By the treatment with silver we arrive, then, at these results:—

I. That the younger cancer cords and their epithelium demean themselves towards silver just as do the lymph vessels.

II. That they correspond perfectly to the lymph vessels in their distribution, arrangements and combinations among themselves, and in their relations to the bloodvessels and to the papillae of the skin.

III. That they are not covered by normal lymph vessel epithelium; but

IV. That the epithelium of the cancer cords becomes larger and more indented, and passes over into normal lymph vessel epithelium.

From these we deduce

I. That the cancer cords are formed from the lymph vessels.

II. That the first cancer cells are altered lymph vessel epithelium.

It will be interesting, doubtless, to show how far the history of the development of cancer may be traced in preserved and fresh specimens, since the treating with silver is a laborious process. The tumors were preserved either in dilute alcohol or in Muller's fluid, the latter to be preferred, for though it must be renewed every few days to guard against the development of fungi, yet the cell elements, and especially the delicate epithelial cells, are better preserved by it. There are, however, very few tumors which keep well enough to allow our investigation of their entire development. The worst of all are the fissured cancers of the lips and all those which have a limited and localized field of attack upon the normal tissues; whereas cancers with mucous degeneration of the connective tissue usually keep very well. Acetic acid should not be used. Imbibition with carmine is of no use, except to beautify the picture. The preparations should be examined in glycerine, which clears up the connective tissue. If the tumor has been hardened in alcohol, the cancerous lymph vessels will be found much shrunk, and the difference and sharply defined boundary lines between the cancer cylinders and the connective tissue will be less marked or absent. The cancer cylinders themselves, however, are often more evident, especially if they have acquired a yellowish tint, shown exquisitely in Pl. I. fig. 2 and Pl. II. fig. 3 and 4, from a cancer of the cheek.

My special object in the examination of hardened specimens was to ascertain if cer-

tain sections [abschnitte] of the cancer cylinders could not be directly recognized as lymph vessels with normal epithelium which had become visible. Such I found in the cancer cords already described, consisting of two layers of flat cells, with a fissure-like cavity, showing well on cross section, but requiring focussing of the object glass when viewed on its flat surface, Pl. II. fig. 4. This is especially well shown where there is a defect in the upper layer, enabling us to obtain through this aperture a view into the interior of the tube. Pl. I. fig. 7 a and Pl. II. fig. 3 and 4. That these pale tubes are lymph vessels is shown by their form, size, mode of dissemination, branching, &c., the size and form of their epithelium with its indentations and irregularities. Nothing is lacking except the fine indentations shown after treating with silver, and these are probably the abnormal results of the silver treatment, since the same effect follows its use elsewhere.

There remain still two questions:

I. Does the further cell-proliferation of the cancerously degenerated lymph vessels proceed likewise from the epithelium of the same?

II. Does it proceed *solely* from these?

These questions will be best answered by an examination of fresh specimens, which in general give better results than those we obtain from the hardened tumors, though even the latter present no essential variations with the exception of the pseudomembrana propria already mentioned.

The fluids used in the examination of fresh specimens should be as indifferent as possible, salt water, solution of albumen, serum and aqueous humor, which are as indifferent as any mixtures of salt, nitre, carbonate of potash, &c., and yet every tumor is affected by each of them, often in a different way by each, individual tissue elements still more so, and most of all the young cancer cells which nearly all fade from sight after a short time. The boundary between cancerous lymph vessels and connective tissue is well shown in fresh specimens, especially in those cancers whose cells are succulent or cylindrical, Pl. I. fig. 6; Pl. II. fig. 1. It is least well shown in those cancers where the cells are spindle shaped, especially if at the same time there is much cell proliferation in the connective tissue, in which case we might believe we had pure sarcoma before us. In general the difficulty increases the more the cancerous lymph vessels approach their normal condition.

The conception of epithelial cancer cells

is quite extended, including pavement and cylinder cells, flat and even thick-bellied spindle cells, cells with proliferations, cells with granular protoplasm and without well-defined peripheries, &c. These all, however, pass over in many places into large, pale, long-polygonal, or rhombic epithelium, the protoplasm becoming clearer as they increase in size, the nuclei sometimes dull, sometimes well marked, but always preserving their contours, the nucleus corpuscles nearly always quite evident, and the peripheries of the cells in some cases showing knobs.

Several times I have seen cells, previously swimming free in the fluid used for investigation, arrive at a defective place in the wall of the cylinder, squeeze through and swim on inside of the tube; the microscope when shifted showing an epithelial wall both above and below them. This is rare, however, for a fresh preparation is lax at best, and when spread out upon the slide, the walls fall together, this being still further aided by the weight of the covering glass.

Where the cancerous degeneration proceeds from below upwards, I have several times detected these cavities beautifully shown from having been long distended by the fluid dammed up in them, which could not enter the cancerous vessels below, the connective tissue having thus lost its elasticity. Pl. II. fig. 9.

From our examination of fresh specimens, therefore, we arrive once more at the conclusion that the first cancer cells represent nothing else than the more or less altered epithelium of the lymph vessels. That the younger cancer cells produce of themselves new cells is shown by the increase of the nucleus corpuscles, and the constrictions and divisions of the nuclei. The new cells can of course divide again, which answers question number one with regard to the further cell-proliferation of once formed cancers. There remains the second question, viz., does any *ajuvant* cause exist for the further cell-proliferation of cancers already formed?

It is possible that connective tissue cells may thrust themselves between the already formed cancer cells and, according to the hypothesis of Rocklinghausen, produce by conjugation a more active cell-proliferation. Biesiadecki has noticed such an intrusion recently in inflammation of the skin, and I have seen also spindle-formed cells between the cells of the rete Malpighi in the skin over a cancerous infiltration, and also in a syphilitic affection. Once also in small

amount between the epithelium of a cancer-cord.

This proves at least that cells of a contractile character can effect such an entrance. The primary stage of cancer is, moreover, sometimes accompanied by excessive cell development in the surrounding connective tissue, as instanced by Waldeyer. According to the recent investigations of Cohnheim, Hernig and others, cells not only in pathological, but also in physiological conditions, pass from the bloodvessels through the connective tissue, and into the lymph vessels; and, according to Recklinghausen, cells pass from the connective tissue alone into the lymph vessels, and appear there as lymph corpuscles. In cancer the obliteration of the lymph vessels would cause stagnation of fluids and cells, and heap up the cells which could no longer be carried away, whether formed in loco or arriving from the bloodvessels, which, I have already said, are generally dilated [ektatisch], a condition very favorable, according to Cohnheim, to the exit of the white-blood corpuscles. Then, too, with the growth of the cancer, the connective tissue contracts and disappears, and as we see no proof of the destruction of its cells by pressure or fatty degeneration, we may imagine at least that these may have been taken in and appropriated as cancer cells.

The "mucous infiltration," or rather degeneration of the connective tissue, most marked in the immediate neighborhood of the cancer cords, Pl. I. fig. 6, is best explained in the same way as the heaping up of the cells, i. e., by stagnation in the vessels, especially as it is most marked in the so called infiltrated cancers, where we have a large tract moderately affected, rather than an excessive local affection, by which former condition the formation of a collateral lymph-circulation is rendered less easy, while a diffused stagnation of fluids is favored.

ASTHMA BRONCHIALE. BRONCHIAL SPASM OF CHILDREN.

(Concluded from page 22.)

I COME NOW to the second question. Is the bronchial asthma of children an autonomous, essential form of disease—an independent affection of the bronchial muscles and the nerves controlling them, or is it only a catarrh, or a modification or symptom of catarrh?

The answer to this question is in part found in the question itself, but in order to

obtain a clear idea of the real nature of the disease under consideration, we must examine the matter with more care. This is no theoretical question, it has rather a very practical weight, for if once the idea of the disease as a bronchitis or catarrh fixes itself upon the mind, and holds a too prominent place, we shall easily be led into an inappropriate course of treatment.

The answer then, according to my belief, is that this asthma, even when it comes on with a catarrh, has nothing in common with it, but is an independent essential disease, appearing sui generis—and for the following reasons:

Thousands of children suffer from acute and chronic catarrh, with or without a spasmodic character, or from broncho-blenorrhoea, and yet the unavoidable irritation of the bronchial mucous membrane and its nerves does not cause reflex motion in form of bronchial spasm.

Also, when the bronchial spasm comes on with catarrh, we often see the spasm cease, and the catarrh continue for days and weeks without return of the former. This would indicate that the asthma is not the result of the catarrh, nor of the inflammatory irritation of the mucous membrane, but that here something else comes into play, a specific cause, different from catarrh, which makes the bronchial muscles contract.

It is true that, as the spasm of the bronchi cannot be directly demonstrated by physical symptoms, the spasmodic nature of the asthma might be doubted, and accordingly it might be maintained that the attacks were caused by hyperemia, swelling or oedema of the mucous or submucous tissues, recurring at intervals or even typically. But aside from the improbability that an acute hyperemia, swelling or oedema of the bronchi should return thus at intervals, nay typically as in my first case, during several weeks, and entirely disappear in eight or ten hours, our opinion as to the essential nature of the bronchial asthma would be in no wise altered, as we still must believe this presumptive periodical, acute oedema to have arisen not from the catarrh of the bronchi, but from something specific and peculiar to this asthma. 2d. The independent character, which we claim for our asthma, is made to appear probable, if only indirectly, by reasoning from analogy, if we observe how completely indifferent catarrh is to other well marked forms of spasm in the neighborhood of the respiratory organs. No one will claim that laryngeal spasm is caused by catarrh of the

larynx, but all will allow that complex causes of a peculiar kind come into play, and hence there is very often observed laryngeal spasm without catarrh, or, vice versa, laryngeal catarrh without laryngeal spasm. Nor would anyone maintain that the spasmodic attacks in tussis convulsiva are caused by the catarrh which accompanies or precedes them, but here again all will allow that some specific affection must have caused the convulsive inspiration and expiration which characterizes whooping cough. 3d. The action of the bronchial muscles in catarrh would tend to disprove rather than favor the idea that spasm of these muscles was caused by catarrh, for experience shows that inflammation and swelling of the bronchial mucous membrane diminish the contractile power of the bronchial muscles, the more completely, the longer they continue, and, as in capillary bronchitis, bring on paralysis of these muscles and thereby a fatal termination. 4th. Neither the chronic catarrh, which accompanies emphysema of adults, nor emphysema itself, cause bronchial spasm directly, for extensive emphysema with severe chronic catarrh can exist for years without bronchial spasm; and vice versa, if the specific conditions are present, paroxysms of bronchial spasm occur with very circumscribed emphysema, as I have seen in two well marked cases, in consultation with Skoda and Oppolzer. 5th. If it be allowable to draw conclusions as to the nature of a disease from the effect of a curative remedy, we may adduce as an argument in favor of the nervous spasmodic nature of the asthma under consideration, the fact that of all remedies, the antispastics and nervines were the ones which showed themselves effective in these cases.

These arguments would seem to be sufficient to prove that catarrh has very little to do with the origin of asthma of children, and that the latter is an independent form of disease, and it is only by comprehending it as such, that we can arrive at a successful treatment.

PATHOGENY.

If the above attempt to prove the independence of bronchial spasm as a source of asthma has been successful, the question with regard to the nature and origin of the disease still remains unsolved. It therefore devolves upon us to seek out the immediate causes of the disease, in order to get a knowledge of its nature and mode of development. The ground-work for this is only to be found in the pathological anatomy, physiology and etiology of the disease.

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All pathological anatomical sources fail, for the cases which came under my observation ended with recovery. And even in a fatal case, on the supposition that the nervous nature of the asthma has been proved—there would be found in the bronchi a merely negative condition of things, or at best secondary disturbances in other parts, emphysema, passive congestion of the brain with its consequences, and finally, in chronic cases, hypertrophy and distention of the right side of the heart.

In all my cases, diseases within the thorax, as pleuritis, pleuritic exudation, organic changes in the heart, &c., could be excluded with certainty. Any diseases which could interfere with the vagus in its course, such as tuberculous bronchial glands, could hardly be considered as anatomical causes, for these are well known to cause paralysis, not intermittent spasms.

As for the *physiological* sources from which we are to obtain an insight into the process of contraction of the smooth bronchial muscles—they must only be trusted with caution as so much of this subject is still in obscurity. Indeed, we do not know with accuracy the nervous arrangement by which the smooth muscles of the bronchi are directly caused to contract, after irritation, for example, of the central extremity of the motor part of the vagus, or by irritation of the recurrent, and as little do we know the fibres of the sympathetic, which have the same effect. While some physiologists maintain that irritation of the peripheral end of the vagus in the neck causes contraction of the smooth bronchial muscles (just as it causes contraction of the laryngeal muscles and stops the action of the heart), others deny that this is the fact.

Thus Romberg maintains after Williams that irritation of the vagus causes narrowing of the bronchial tubes. Longet claims that he has seen the smooth bronchial muscles contract on galvanizing the vagus; and, although Volkmann denies the truth of this, he confirms the contraction experimentally, by binding a tube in the trachea of a beheaded animal, and galvanizing the vagus, when a light, held in front of the tube, was blown out. On the contrary, Donders, Rosenthal, and others, deny that this contraction follows irritation of the vagus.

We see then that we know nothing with regard to the innervation of the bronchial muscles. Probably they are innervated, as all other smooth muscles are, by the sympathetic. This is seen in the fact that irritation of the vagus in the neck, causes far

less contraction of the bronchi than does irritation of the trachea, because here the contractions of the bronchi are directly caused by the ganglions of the sympathetic. But even allowing (what is denied by many physiologists, as I have remarked) that irritation of the vagus in the neck causes far less contraction of the bronchi than is caused by irritation of the trachea, this would still be no proof that the vagus innervates the bronchi, for fibres of the sympathetic are so abundant in the course of the vagus, that Volkmann has stated that the vagus is only a subdivision of the sympathetic.

We must therefore adopt, as the more probable supposition, that the reflex action which causes contraction of the bronchial muscles passes through the sympathetic nerves, and that the ganglions of the sympathetic are perhaps the centres of this action. For this reason we see also that bronchial spasm (hysterical asthma) is associated with those nervous affections in which the sympathetic takes a prominent part, as hysteria with spasm of the smooth muscles of the bladder, uterus, intestine, stomach, esophagus, and cardiac orifice. I am acquainted with a case, as observed by Chrobak on Oppolzer's clinic, where there existed for a year and a half, as a result of a flexion of the uterus, a most perfect bronchial spasm, which, nevertheless, always disappeared instantly when the uterus was replaced, and always returned if the uterus resumed its morbid position, finally disappearing permanently with the use of a suitable uterine supporter. In contrast to this frequent participation of the bronchi in affections of the sympathetic, we find that under circumstances where the cerebro-spinal system is prominently affected, as in tetanus from strychnine, the bronchi act normally, just as do the heart and other involuntary muscles.

If, with our limited knowledge of the physiological causes of innervation of the bronchial muscles, we still wish to adopt some theory with regard to it, we may say that, even if we consider it as an established fact that irradial (centripetal) and reflex influences pass from cerebro-spinal into sympathetic nerves, and that in this way irritations and disturbances which affect the spinal system can cause contraction of the bronchial muscles, yet in general we find that the muscles are most influenced when the irritation is applied to the whole sympathetic, or its nervous terminations in the lungs and bronchi themselves. For this reason we often see that, in case of adults,

the asthma which exhibits the best marked bronchial spasm, viz., that which is excited by chronic emphysema, is caused by a direct disturbance of the widely distributed, fine branches of the sympathetic in the lung.

As an addition to this physiological examination of the subject, which will hardly bear a strict criticism, I would mention a physiological process which Henle, in his rational pathology, adduces as an example of "sympathetic movement" of organic muscles of animal life. He maintains that the dyspnea which is brought on by going up stairs or making other physical exertion, depends on the sympathetic contraction of the smooth muscles of the bronchi. Here, then, we see irradiation or reflexion from cerebro-spinal fibres into the sympathetic. So, also, the dyspnea which emphysematous persons feel on going up stairs (even when they have no paroxysms of dyspnea) may depend on the same kind of bronchial spasm, caused by "sympathetic movement."

ETIOLOGY.

We come now to the discussion of the etiological relations of the bronchial spasm. If we study these with reference to the immediate causes of the development of the bronchial spasm and its nature, it must be confessed that we obtain but little information.

The small number of my observations prevents me from drawing any safe conclusions which could furnish a groundwork for the etiology, whether concerning the age, sex or constitution of the parents or children, or the hygienic circumstances in which the children live. From what has already been said, we may attribute to the almost never-failing catarrh its just degree of importance, and, accordingly, it should be considered as one of the complex conditional causes of, and as occasionally giving the final impetus to, the disease.

The fact that all the children under my observation bore marks of anemia, rachitis and nervous irritability, must not be considered of very great importance, and at most only indicates a predisposing cause. Thousands of rachitic, anemic, weakly children suffering from catarrh and even from laryngeal spasm, are not troubled by bronchial spasm, in spite of their presumptive tendency, because the peculiar specific causes, themselves entirely unknown to us, are wanting. We must, then, confess our entire ignorance of the etiological conditions of this disease, just as we have not

the faintest idea of the causes of other nervous diseases of children, for example idiopathic convulsions.

DIAGNOSIS.

If we take a comprehensive view of the symptoms exhibited by the above five cases, we obtain so distinct a picture that the diagnosis may always be made without difficulty. I will, however, mention separately the pathognomonic points of the diagnosis.

1. The characteristic mark, which prevents any confusion in diagnosis, is severe uniform dyspnoea, lasting 8-10-20 hours, by which croup, pneumonia, pleuritis, bronchitis of the greater and smaller bronchi, oedema, &c., can be excluded with certainty.

2. The rapid development of the dyspnoea, without fever; without increase, and indeed with diminution of temperature; or, if a catarrh attended with fever was already present, the development and increase of dyspnoea, with diminution of fever.

3. The peculiar high fine whistling, hissing sounds, on auscultation, together with slight râles or none; or, in case the asthma was ushered in by catarrh of the greater or smaller bronchi, the disappearance of the râles, caused by the latter, and the preponderance of the whistling sounds.

4. The cough, for the most part laryngeal, but very slight; or, when the spasm was preceded by catarrh, the diminution of the cough as the asthma increased, and the increase of it as the asthma diminished.

5. The decrease of dyspnoea, and frequently its disappearance after 8-10, or at any rate after 20-24 hours, and at the same time increase of cough and frequently of râles.

6. On further observation, the recurrence of the dyspnoea at stated times, or indeed typically; and its disappearance again after a fixed space of time.

As pathognomonic marks of less value may be mentioned:—

1. The character and form of the dyspnoea, which have in a general way a great resemblance to those of croup. The degree of dyspnoea is such as is found in the most severe cases of croup, and there is frequently the same violent convulsive drawing-in of the epigastrium and false ribs, the same laboring of the accessory muscles in inspiration, and, in contrast to ordinary passive expiration, the violent action of the abdominal wall. Finally, the prolonged inspiration and expiration, and the noisy breathing, audible at a distance, which are also common to both croup and

bronchial asthma. But while in croup this is heard, with the unassisted ear, as a rough, coarse, whooping tracheal sound, it is in asthma a high whistling sound, sometimes combined with a fine râle. In croup we hear, on auscultation, that transmitted laryngo-tracheal sound which covers up the vesicular respiration, while in asthma there is to be heard on almost every part of the thorax a fine, high whistling, caused by air streaming with difficulty through the fine bronchi—a whistling which disappears as the attack ceases, and gives way to a rough respiration, with or without râle.

2. The dyspnoea in case of asthma continues more or less uniform through the whole attack, while in croup it is of very varied intensity, on account of the paroxysms of suffocation which occur at intervals, and after which the children wake from a state of coma in great agony and gasp for breath.

3. The poisoning of the blood with carbonic acid, which comes on very early, even in a few hours, and makes itself known by sopor.

4. The development of the disease without fever, or if fever is already present, the early disappearance of it, together with the advancing development of the asthma, which then frequently goes on to its end without fever.

The diagnostic signs hitherto enumerated ought to be sufficient to enable anyone to make a correct diagnosis, even in the first case which may come under his observation. I think it, therefore, as well to pass over the differential diagnosis, and would only remark, with regard to catarrhus siccus, with which we have become acquainted only lately, through Stein's work, that aside from the fact that the symptoms of asthma above described have but very little resemblance to those of catarrhus siccus, it is also to be noticed that, contrary to what was observed in Stein's cases, all my cases occurred in children of well-to-do families, in the most favorable hygienic circumstances—that all ended with recovery, and were very seldom chronic. In this peculiarity, the difference between the two diseases is shown clearly enough.

TREATMENT.

In reporting my five cases, I have given a hasty sketch of the treatment, and will now merely add a few words to complete the subject. With regard to the catarrh which often accompanies the asthma, it has been shown sufficiently well that this has only a secondary claim for treatment.

However general the belief on theoretical grounds that narcotics, such as morphia, belladonna, and cannabis Indica, diminish the spasms of muscles by relaxing them, as Romberg maintains—yet these drugs have in practice always shown themselves useless, at least in my cases.

Only quinine and musk have been proved to be, or supposed to be, of use, but they must not be used in too small doses.

As the symptoms are at times very urgent, and it may be necessary to alleviate the dyspnoea quickly, we may make use of large doses of quinia. I give in such circumstances, to children of one or two years, gr. vi. in course of 4-6 hours during the attack, or in typical cases two or three hours before it. I gave children of the same age gr. iij. of musk in course of 6 or 8 hours. If the medicine was vomited it was given in the form of an injection. If the dyspnoea is not diminished by these remedies, liq. ammon. anisatus can be tried, in solution $\mathfrak{S}i. = \mathfrak{Z}iii.$ —one teaspoonful every $\frac{1}{2}$ hour. Ammonia stimulates the medulla oblongata, and so brings up its irritability, which has been weakened by the carbonic acid poisoning, and thus causes more forcible inspirations, by means of which the obstruction caused by the narrowed tubes is overcome. Among other remedies which I have tried, in order to relieve the spasm of the bronchi, I will mention the inhalation of infusum foliorum belladonnæ (gr x. = $\mathfrak{Z}iv.$) with the atomizing apparatus. Its successful use in cases of spasmodic catarrh, led me to try it in asthma also. But I will not give a decided opinion about it till I have used it more frequently.

Chloride of bromium must be recognized as the most effective and reliable of the above remedies, and recommended as the first to be used in every fresh attack of asthma. Musk and quinine may always be used at the same time if the dyspnoea is pressing.

When the children refuse to take the chloride of bromium, or if they vomit it, which they rarely do, it may be given as an injection—gtt. iij. in water and valerian aa $\mathfrak{Z}ij.$ —one third to be given at intervals of an hour.

Finally, a word on prophylaxis. When we consider how little we know of the etiology of bronchial spasm, it will be evident that our attempts at prevention must be very limited.

We should at any rate regard catarrh as one of the etiological conditions of the asthma, and endeavor to guard the children against atmospheric influences, and invigo-

rate their constitutions. Anæmia, rachitis, and nervous irritability, as predisposing causes, must be treated with iron, &c.

ANOTHER REMEDY FOR HYDROPHOBIA.

By T. WILLIAMS, M.D.

In proportion as a disease is incurable, it has been said, remedies and specifics for it multiply. This is as true of hydrophobia, as of consumption and cholera. The remedy to which I wish to call the attention of the profession now is not a new one, but it is one which, so far as I know to the contrary, has received very little attention from the profession; although it may have deserved a better fate than to be passed over in silence by nearly all the writers on materia medica.

The *scutellaria latifolia*, or common skull-cap, has, for an indefinite period, enjoyed the reputation of possessing anti-hydrophobic virtues among certain herbalists, and botanic doctors, and has long been a popular remedy among certain of our foreign population. Prof. C. H. Cleveland gives a formula for preparing a concentrated extract from the tincture of *scutellaria latifolia*, which is said to be an excellent nerve tonic, and is highly recommended in King's Eclectic Dispensatory in extreme depression of the nervous and vital powers. My attention was first specially called to the herb as a remedy for hydrophobia—both as a preventive and cure—by an old farmer of German descent. He had himself been bitten by a mad dog some years before, and had been advised to use the *scutellaria* as a preventive. This he employed in strong decoctions and in large doses. Circumstances obliged him to omit the medicine for a time, and spasms came on. Large draughts of the decoction were then repeatedly given, with the apparent effect of relieving the spasmodic action. He recovered entirely. I give this bit of information for what it is worth. It is possible that the plant may possess unknown properties, and it is, at least, entitled to a trial in such cases.

CHRONIC CATARRH.—The tincture of acornite, taken in five-drop doses every four hours, has cured this troublesome symptom when the ordinary remedies have been tried unsuccessfully. Opium has similar action in such cases.—*Medical Archives*.

Reports of Medical Societies.

BOSTON SOCIETY OF MEDICAL SCIENCES. J. ORNE
GREEN, M.D., SECRETARY.

Oct. 4th, 1870. The Society met at the house of Dr. Ellis, Dr. Ellis in the chair.

Dr. Jeffries showed some specimens of human hair which had suddenly turned white. The lock of hair exhibited showed some hairs nearly black and some almost white. The young lady, aged 22, from whom the hair was taken, died of dysentery on the tenth day of the disease, and during the last twenty-four hours of life her hair was noticed to change and become gray. The case was a well authenticated one, the change having been noticed by many friends and by the physician who gave the specimen to Dr. J. The fact that the hair will thus lose its color in one night is well established by a case in *Virchow's Archiv*, in which the color changed from dark to gray, and the microscope revealed the cortical substance filled with air bubbles.

Dr. Greenough stated that Wilson had found air bubbles without any loss of pigment, not only in hairs which had suddenly become white, but also in those in which the changes had been gradual. In his own examinations of white hairs, however, which had been numerous, he could not confirm this observation of Wilson, for he had always found a loss of pigment, but never any air bubbles. From analogy, also, we should expect that such would be the case, for in albinos, where the pigment is wanting, the hairs are white; and also in spots on the skin, as sometimes seen, where the pigment is gone, white hairs are developed. Dr. G. also spoke of a fleece of wool, of which he had a specimen at home, in which the wool was striped transversely black and white; such cases had been reported by Wilson and Pincus, and the explanation given was that air entered the hair for a time from the follicles, then ceased, and then entered again. The wool in this case, however, showed, by the microscope, pigment in the dark and no pigment in the white portions.

Dr. White said it was not uncommon for pigment to be developed in any one spot for a time and then cease, but this did not continue alternately. He also called attention to the fact that barred hairs were characteristic of many genera of animals.

Dr. Ellis showed microscopic sections of

lung tissue to demonstrate the difference between pneumonia and miliary tubercle. The specimen of pneumonia was taken from an adult subject one year ago, and had been preserved in chromic acid and alcohol; that of tubercle from a boy twelve years old, who died of cerebral disease which showed itself only two days before death, and in whom there were no marked pulmonary symptoms. The specimens showed most characteristically the changes in the diseases. In the sections of the pneumonic lung the air cells were filled with the new cell-formation; in the tubercular specimen the air cells were distinct, unaffected and surrounded the solid and perfectly distinct mass of tubercle. By the naked eye also the minute opening of the bronchus could be seen in the centre of the tubercle.

In reply to Dr. Knight, Dr. Ellis said that the pneumonic and tubercular processes might be combined, as was the case in chronic phthisis.

Dr. Dwight asked whether it was possible, by examining the new cell-formation alone in the two processes without knowing its relations to the air cells, to tell the difference between the granular masses. Dr. Ellis replied that it was impossible; that when in Berlin he had satisfactorily proved the impossibility of recognizing tubercle by its appearance; that there was nothing typical in the tubercle corpuscle itself. The corpuscle of pneumonia approached nearer the so-called lymph corpuscle than the tubercle did.

Dr. Warren said that he had supposed that a detritus in the centre of a corpuscle was characteristic of tubercle.

Dr. Ellis considered this detritus only characteristic of degeneration; some miliary tubercles were perfectly translucent to the naked eye and did not show degeneration.

Dr. Greenough thought that this same opacity or detritus was seen in the gummy tumors of syphilis.

Dr. Warren stated that the proof of the position of the new cell-formation in the two diseases under discussion was that in pneumonia the granular masses took the shape of the air cells, while in tubercle they took rather the shape of the interstitial tissue. He could recognize no difference between the tubercle cell and the inflammation cell, and he considered them both to be similar to white blood corpuscles. A distinctive peculiarity of tubercle was that in the youngest forms, namely, the submiliary, we have evidences of fatty degeneration in the centre of the mass.

Nov. 1st, 1870. The Society met at the house of Dr. Homans, Dr. Hay in the chair.

Dr. Dwight read a paper entitled "An Instance of a so-called Endless Nerve, with remarks," and demonstrated the facts mentioned in the paper on a preparation from the upper lip of a seal and on a frog's cornea prepared with chloride of gold. [This paper will shortly be published in the JOURNAL.]

Dr. Amory then read a paper on "Asphyxia as one of the Causes of Anæsthesia," stating the grounds on which such a supposition was founded.

Dr. Waterman stated that the phenomena described by Dr. Amory as accompanying asphyxia reminded him of those which follow the administration of cannabis Indica, especially the double consciousness and the great prolongation of time and space. In a case which he had himself observed, the thoughts of the person affected were influenced by his surroundings and by suggestions made to him; by suggesting disagreeable things the course of his thoughts was unpleasant, and by pleasing suggestions they became very agreeable.

Drs. Homans and Dwight had both observed this great prolongation of time, and Dr. Homans stated that in his own case it was followed by very great acceleration of the pulse, the pulsations reaching 180 and more per minute.

Dr. Jeffries narrated his own experience when once under water: it seemed, he said, as if he were the spectator of a panorama of his own life; he noticed the sense of repose, the double consciousness, the entire absence of fear, and finally a sensation of pleasure, as described in Dr. A.'s paper. In regard to nitrous oxide, he said that he had often wished to try it in some of the operations on the eye, but had felt uncertain whether the anæsthesia would be of sufficient duration. He had that day performed Passavant's operation for adhesions of the iris for the first time without any anæsthetic, and had found that seizing the iris in the forceps and dragging upon it was the most painful step in the operation. As this operation generally required to be repeated several times, it would be a great advantage if some anæsthetic could be used whose after effects were less disagreeable than those of ether and chloroform, as frequently the objection of the patient was rather to the anæsthetic than to the operation itself.

Dr. Amory stated that anæsthesia from the gas lasted for about four minutes, and could then be renewed without a return to

consciousness, and the patient could be kept insensible for ten minutes.

Dr. Lincoln remarked that in the case of asphyxia from partial drowning, reported by Dr. Amory, no mention was made of anything approaching the "agony" of suffocation. What that agony meant he had satisfied himself by holding his breath as long as possible, say for eighty or ninety seconds, until the sensations became intolerable. But the time required to deprive this lady of outward consciousness was but a few seconds, and a sort of dread—without the sense of suffocation—seemed to be the chief mental phenomenon during the first stage. If this was a pure case of asphyxia, there must be a very great difference in the degree of readiness with which different persons succumb to the influence of suffocation. It deserved to be noticed that there was just as wide a difference in the sensations of people who inhaled ether; some passed imperceptibly under its influence, while others felt a deadly sense of suffocation, even though the ether were carefully given.

Dr. Edes read a paper describing some observations of his confirmatory of Cohnheim's theory of inflammation.

Dr. Warren (he said) demonstrated to us last summer, some of the appearances seen in Cohnheim's experiments on the frog's mesentery; but time did not permit, on our part, of the careful observation necessary to see the essential point, that is the actual passage of a white globule through the walls of the vessels. The accumulation of white corpuscles inside the walls of the vessels and their appearance outside were not first observed by Cohnheim, but no one before him has described the passage through the walls. This phenomenon I was anxious to see for myself, and having obtained, by Dr. Warren's politeness, a supply of woorara, I set to work upon frogs.

I administered the drug, I think, to at least a dozen, keeping some of them 24 or 48 or more hours upon the stage of the microscope, and had occasion, once or twice, to inject the woorara for the second time. Into the lymph sacs of two I injected vermillion several times previous to exposing the mesentery, and observed many white corpuscles which had taken up the granules.

I was not, however, in any of these, at all satisfied that I had seen a single corpuscle pass through the wall of the vessels. The accumulation of them is very easily seen, and takes place, to some extent, within a very few minutes. Also, outside of the vessels, after a while, I could see

irregular forms, some still changing, others stationary. A few times I saw cells of a form which answer very well to the description of those which have passed through the walls and are moving away from them. A similar form is often observed inside the vessels, where a white corpuscle becomes adherent and is then pulled along by the current, so that a long, thread-like process is drawn out, and the corpuscle is anchored and swings like a buoy in a tide way.

Roloman Balogh, who denies the accuracy of Cohnheim's observations, speaks of the field being suddenly obscured by a multitude of white corpuscles, which he thinks arise from hemorrhage. I have also been troubled in this way, and have no doubt that these corpuscles arise from a hemorrhage, which, so far as I have seen, is, to a greater or less extent, almost inevitable. They swim over or under the mesentery, sometimes moved by the object glass coming in contact with the intestine, or some other accident. Why they should, as they sometimes do, separate themselves from the red corpuscles, is more than I can say; perhaps because coming from some vessel principally filled with them.

In fact, there seemed so many sources of deception, and the direct observation of what I wished to see seemed so difficult, that I was beginning to doubt the fact.

Finally, however, I was so fortunate as to see, within a short time, nine white corpuscles leave the vein within a limited space, and a portion of these I was able to make out, though less distinctly, on the outside. Three of these seemed to go through the same place, then I saw another disappear gradually in another place, two in another, and, finally, three near to the first three, though not all in the same place.

On the other side of the vein was a red corpuscle hanging half out and half in the vein, which did not change its position during the time I was observing it. Then a red corpuscle came down on the same side where the white ones had disappeared, and stuck flatwise to the wall. When I looked at this again, after a short interval, a little piece of the up stream end seemed caught in the wall of the vein, as if it had begun to go through. As to the appearance of the corpuscles outside the walls, it seemed that they were not round and distinct as within, but much more irregular and indistinct. When two or three had gone through at one place, it was not easy to separate them afterward. I felt no doubt, however, as to their having gone through,

instead of being washed away. Amoeboid movements, though I have seen them within the vein, were, in the case of the corpuscles which I saw go through, usually very slight. I did not trace any cell making its way from the wall after passing through, though, as I said, the beaker-shaped cells, with long stems, were probably doing so. I did not look very carefully for this, having satisfied myself on the more important point.

I should not have thought of offering these remarks to the society had not my observations and the fact that some observers deny the truth of Cohnheim's observations shown that the essential point, namely, the passage of the cells through the walls, is not a perfectly simple affair to see.

Dr. Edes also showed a preparation received from Dr. Woodward, U.S.A., intended to show the epithelium and stomata in the vascular walls.

Dr. Warren said that after a great number of experiments he had observed the entire process, from the appearance of the corpuscle floating in the current of blood to its appearance external to the vessel wall, in only two instances, although he had very frequently seen the corpuscles fixed in the wall. There were so many disturbing influences from the vast numbers of corpuscles in the field, from their rapid movement, &c., that most careful and concentrated observation was necessary to observe the entire process.

Dr. White stated that Mr. Morton, a medical student, during the past summer had watched the white blood corpuscles pass through the walls, and on one of his preparations Dr. White himself had watched one corpuscle as it passed through, and had satisfied himself that the corpuscles do pass as described by Cohnheim.

Dr. Dwight stated that Prof. Stricker considered the walls of a vessel as merely a protoplasm without openings, and that the corpuscles worked their way through this as a fish through the water.

Dr. Warren said that Recklinghausen claimed to have seen the stomata in capillaries which had been injected with nitrate of silver. Recklinghausen had also claimed to have demonstrated the existence of stomata in layers of epithelium by carefully placing the diaphragm of a guinea-pig over a cork ring and on top of this dropping a little milk; he had thus seen the globules of fat pass through the epithelial layer into the sub-epithelial cellular tissue.

Dr. Warren exhibited microscopic sections of three different diseases of the rec-

tum, and described the appearances and characteristics of each. The first was a glandular adenoma, a polypoid growth of an innocent nature, consisting of acini lined with cylindrical epithelium, many of which opened upon the surface of the polyp. The second specimen was a cylindrical epithelial carcinoma, apparently taking its origin in the submucous tissue; it exhibited in some parts exactly the same acini, epithelium and spaces as the preceding innocent growth, but its malignant character was determined by the fact that on making sections in different parts it was found that this gland-like growth had invaded the deeper muscular layers, where it had lost its innocent glandular appearance and showed an irregularity in the form and arrangement of the epithelial cells. The third specimen was a carcinoma involving only the mucous membrane; it showed irregular masses of cells projecting far below the mucous follicles, towards the surface of the mucous membrane; where there was an ulceration these masses were larger and more broken up.

Dr. Ellis said that the most striking difference between the polypus and the first carcinoma was the uniformity in the character of the growth in the polypus and the great irregularity in the carcinoma, where could be seen first the glandular growth, then some other tissue, and then again the glandular tissue, an arrangement which could be found in no normal tissue; the outlines of the epithelium cells being brought out by the staining of the cement-substance between the cells.

Dr. Warren said that without regard to the cells, this uniformity in one and irregularity in the others was sufficient to characterize the innocency or malignancy of the diseases. He said that he was at first doubtful in the first carcinoma because the growth was quite regular in the parts first seen, but on making further sections the irregularity was seen and the malignancy of the growth determined.

Dr. Green called attention to Förster's definition of carcinoma, namely, that it is characterized by the fact that its cells, as regards their form, size and arrangement, belong to no decided type of tissue.

RHODE ISLAND MEDICAL SOCIETY.

THE quarterly meeting of the Rhode Island Medical Society was held in the Library Hall of the Rhode Island Hospital on Eddy street, on Wednesday, Dec. 21st. Dr. L. F. C. Garvin read an essay upon "Alcohol, considered as a Medicine and a Nutrient."

Dr. Garvin stated as the result of his experience in practice, that it was rarely beneficial to his patients, that it could not be considered a food, and that it simply arrested a waste of the tissues. He thought it should be classed with other poisonous drugs, and its sale restricted, like those, to druggists and apothecaries, and that it was the duty of every conscientious physician to teach the young it was a potent poison, and seek to banish its use from the homes he was called to visit. It was an able paper, and a strong argument against the use of alcohol as a remedy for any disease.

A lengthy discussion followed, after which Dr. Ariel Ballou, of Woonsocket, read a paper entitled "Recollections of Scarlatina as presented in a practice of 38 years."

In it, he gave an account of his experience with scarlatina as an epidemic since 1832, the progress of the disease, and the various changes in medical treatment of it up to the present time. Remarks relative to the former treatment of scarlatina as compared with the present were made, after the reading of Dr. B.'s paper, by Drs. Arnold, Carpenter and Capron. The Society then adjourned. On re-assembling, Dr. Charles O'Leary, of Providence, delivered an address on "The Claims of Clinical Medicine to be ranked as an independent Science." The thanks of the Society were extended to Dr. O'Leary for his able address, and it was voted that it should be published.

Dr. Clapp, of Pawtucket, then read a paper on Popliteal Aneurism, and illustrated it with a detailed account of a case which occurred in his practice. Miss A. E. Tyng, a practising physician, made an application to the Censors for admission as a member, which was referred to the Society for action. After some discussion, the ballot was taken and it was voted not to admit her.

* Bibliographical Notices.

Spermatorrhœa: Its Causes, Symptoms, Results and Treatment. By ROBERTS BARTHOLOW, A.M., M.D. New York: Wm. Wood & Co. 1870.

This work presents in a concise form a well-written and exceedingly practical view of the subject which it treats. The author differs entirely from Lallemand in his opinion respecting the pathology of the disease. He admits the occasional existence of ulce-

rations and other morbid conditions of the prostatic portion of the urethra in cases of spermatorrhoea, but asserts that dissections fail to prove the almost invariable connection between the above lesions and the disease in question, which constitutes the essence of Lallemand's ideas of its pathology. He ranks it among the neuroses, to which class he shows that it properly belongs by a train of sound reasoning.

In his treatment of the disease he naturally regards the *porte caustique* with but little favor; and although he does not absolutely discountenance its use, he limits it to a small class of cases, and even in these he recommends injections as a safer method of obtaining the same result. He speaks favorably of circumcision in cases where an elongated prepuce acts as an irritant, and incidentally expresses an opinion that it would be well for society if the Jewish rite were made universal as a means of prophylaxis against syphilis. Of mechanical appliances he says but little, but evidently places his chief reliance in internal remedies and the observance of hygienic rules which vary in different cases. He pronounces the bromide of potassium to be the most efficient and certain of the anaphrodisiacs, but says that this drug will prove effectual in proportion to the degree in which structural lesions are absent.

The book contains but little more than one hundred pages, printed with clear type, and will prove a most valuable aid to the profession in the treatment of a class of cases which (particularly through the indifference and neglect of regular physicians, we fear) constitute a never-failing source of profit to advertising quacks. F. C. M.

Lunacy: its Past and its Present. By ROBERT GARDINER HILL, F.S.A. London: Longmans, Green, Reader & Dyer. 1870. 8vo. pp. 113.

THE writer of this little book, while giving at some length a history of Lunacy and the advance made in its treatment, has for his principal object the defence of his own claims to the "non-restraint method." In no portion of the science of medicine has a greater change been made than in the care of mental aliens, in none has our progress been more conspicuous than in the recognition of our moral obligations, when we substituted a law of kindness for the practice of cruelty in the treatment of the insane. "The conception of abolishing all mechanical restraint ushered in the dawn of a new day—its practical success is the crowning

of the edifice." Mr. Hill claims that he, while House Surgeon to the Lincoln Lunatic Asylum, first in 1835 or 1836, conceived the idea that an institution for the insane could be conducted without having recourse to the employment of any instruments of restraint whatsoever. In the establishment of this claim, we think Mr. Hill has shown himself the victor; indeed, the very person for whom injudicious friends claimed the honor, awarded it to Mr. Hill, and, what is more, lived and died without leaving a line in favor of his own claim. Numerous testimonials confirmatory of Mr. Hill's claims are appended to the book.

The American Practitioner: a Monthly Journal of Medicine and Surgery. Edited by DAVID W. YANDELL, M.D., and THEOPHILUS PARVIN, M.D. Louisville, Ky., 1870. 2 vols.

THE bound volumes of our cotemporary, which we find on our table, comprise the monthly numbers of the journal for the year just closed. The *American Practitioner* was started in January, 1870, on the plan of the monthly conducted by Dr. Anstie, in London. It is a journal of therapeutics. Excluding all theoretical discussions, and all long details on every subject, its pages are filled by the editors with matter relating directly to the treatment of disease. We have always considered it a welcome visitor among our exchanges, and have made frequent extracts from its pages. We cannot fail to notice the chaste and beautiful dress in which the printer and the binder have clothed the volumes before us. They are, indeed, both without and within, worthy examples of our medical periodical literature.

Photographic Review of Medicine and Surgery. Edited by F. F. MAURY, M.D., and L. A. DUHRING, M.D. Philadelphia: J. B. Lippincott & Co. 1870.

WE have examined this beautiful little brochure with much pleasure. It will be published on alternate months, and will contain, as its title indicates, photographic representations of disease occurring in the Philadelphia hospitals. A descriptive text accompanies each photograph. Judging from the number before us, with its four photographs, it will be a work well worth a place in the library of every practising physician.

Medical and Surgical Journal.

BOSTON: THURSDAY, JANUARY 19, 1871.

In justice to the gentlemen who have favored us with original communications, and to our readers, for whom we have on hand a large store of valuable articles from foreign and home journals, we feel obliged to yield our Editorial corner this week—also to add four pages to our usual space.

"FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY, 1781-1870, ALPHABETICALLY ARRANGED."—The official list of the Fellows of the Society is before us. It has required the labor of a skilled hand for more than a year, and, to those accustomed to the daily use of such catalogues, shows a large amount of faithful work. The Committee on Publication, however, are sensible that errors and omissions must necessarily exist, and they request to be at once informed of such. In the last general catalogue, issued in 1854, there were 2005 names; in this there are 3057. There are known to be dead 1066, and there are about 1000 members alive and practising in this State, leaving about 1000 for honorary and retired members.

MESSENGERS. EDITORS.—By turning to your file of the Boston Medical and Surgical Journal for October 24th, 1861, you will find the identical method for stopping an obstinate epistaxis, described in last week's journal, by Dr. Whitney—translated from the *Gazette des Hôpitaux*. On comparing the two accounts it would seem extremely probable that the "non-medical neighbor" quoted by Dr. W. may have got the suggestion originally from that source. The *Gazette* method is given in fuller detail than Dr. W.'s, and may be worth republishing.

January 13, 1871.

Ex.

ZURICH, DEC. 15, 1870.

MESSENGERS. EDITORS.—Upon the 12th inst., the Swiss general government, being instructed in regard to the wishes of the Swiss physicians, passed by a large majority an act admitting a woman, "not only for the especial case, but as a principle," to the State medical examinations, thus opening

to her every medical society, giving her the possibility of attaining instructors' chairs, and rendering incumbent upon her every duty which a physician owes the State. The Swiss government has thus removed every official obstacle to the practice of medicine in Switzerland by a woman—obstacles from private prejudice will be few, since she is allowed to study with the young men who will be her fellow practitioners, and so has the opportunity to make them her friends.

By publishing the above you will greatly oblige, yours most respectfully,

SUSAN DIMOCK,
Student of Medicine.

DEATHS FROM CHLOROFORM.—Another of these accidents, where "no blame is attached to any party concerned," is chronicled in the *Hartford Evening Post*. Indeed, except in the matter of using chloroform in place of the less dangerous ether, all due precaution seems to have been taken. Chloroform was given in this case to allow the reduction of a dislocated humerus. Before administering it, the surgeon carefully examined the heart and lungs and found them apparently free from disease. The testimony of physicians present is that he used more than ordinary caution.

"Dr. — himself stated, in answer to inquiries, that the reason why he exercised his unusual caution in giving the chloroform was because of Mr. —'s habits as to the use of alcoholic stimulants, whereby his constitution was impaired. Dr. — also stated, in answer as to what he considered the cause of death, that he thought that the chloroform was the immediate or exciting cause, but that death would not instantly have occurred without a predisposing cause, such as some disease of the heart or other vital organs which could not have been detected. He also answered that deaths from chloroform were of more or less frequent occurrence, and that even this year, Dr. Simpson, the discoverer of chloroform [the italics are ours], had a patient die, to whom he himself was administering it, and that it had repeatedly happened in the hands of the most eminent surgeons."

There were reported to the Cincinnati Academy of Medicine, October, 1870, by Dr. W. W. Dawson, a recent case, and three others that had occurred in Cincinnati since 1848, and the "details of some five or six other unpublished cases" in the vicinity, known to him; by Dr. Ludlow an ad-

ditional case; by Dr. Stuart, of Fayette County, Ohio, two more cases—thirteen before unpublished cases.—*Medical and Surgical Reporter*, Dec. 10, 1870, p. 474.

THE CITY HOSPITAL REPORT.—The Trustees of the Hospital have constituted Messrs. Little & Brown the general publishers of the Report, and it can be obtained from them at a very low rate for a book of its value and size.

APPOINTMENTS.—Dr. Thomas Waterman has been appointed one of the physicians at the central office of the Boston Dispensary. The following gentlemen have been appointed house officers at the Massachusetts General Hospital for the coming year: medical, A. L. Mason and E. G. Cutler; surgical, F. A. Harris, W. J. Morton, W. Channing, Jr., and J. E. Tobey.

SPEAKING AND SINGING WITHOUT A TONGUE.—In the transactions of the Philosophical Society, published between 1742 and 1744, there is an account of Margaret Cutter, who, when four years old, lost her entire tongue from a cancerous affection; but who, nevertheless, afterward retained the power of taste, swallowing and speech, without any imperfection whatever. She not only spoke as fluently and with as much correctness as other people, but also sung to admiration, articulating with distinctness all her words while singing. What is not less singular, she could form no idea of the use of a tongue in other persons. This remarkable case was brought before the Royal Society, under certificates of attestation from the minister of the parish, a medical practitioner and another respectable citizen, well-known in Suffolk, where she resided. On account of the extraordinary character of the case, the society requested an additional report upon the subject, and from another set of witnesses, named by the society for the purpose, and for whom they drew up the necessary questions and marked out the proper course of examination. The second report coincided with the first in all particulars, and shortly afterward the young woman was brought to London, where she confirmed the account by personally appearing, and speaking and singing in the presence of the members of the Royal Society and many other persons.—*The College Courant*.

OBJECTIVE TINNITUS AURUM.—Dr. Politzer brought before the Medical Society of

Vienna on June 10, 1870, a young girl from whose left ear a rhythmical ticking can be heard. This is perceived even when the girl is asleep, and had been lasting for the last five months. This sound must not be confounded with the ordinary subjective tinnitus aurium, nor with the noise which some people emit by contraction of the tensor tympani. The patient cannot stop the ticking, nor produce it when a pause has taken place. The sound, however, is no longer heard when the girl pronounces the German vowels *a* or *e*, nor when the velum is pressed upwards. Dr. Politzer believes that the ticking is caused by the tensor palati molliis pulling from the Eustachian tube to the velum, by drawing the mucous portion of the tube from the cartilaginous part. Dr. Gruber doubted this explanation, and would refer the ticking to the action of the tensor tympani.—*Lancet*.

NEW TEST FOR ARSENIC.—Bettendorf has found a test so delicate that one part of arsenic in 1,000,000 parts of solution may be detected, and the presence of antimony does not affect it. To apply this test the suspected liquid is mixed with hydrochloric acid until fumes are apparent. Chloride of tin is then added, and a basic precipitate containing the greater part of the arsenic as a metal mixed with the oxide of tin is thrown down.—*Cincinnati Med. Reporter*.

THE FORCE OF UTERINE CONTRACTION.—The extreme force of uterine contraction produces a pressure of 3,402 lbs. per square inch, which is equivalent to a pressure of 54,106 lbs. acting upon a circle of 9½ inches in diameter, which is assumed as the average area of the pelvic canal. The maximum force used to expel the fœtus, by both uterine and abdominal muscles combined, is estimated by Soulin, by forceps experiments made on the dead body, at 110.23 lbs., a result which is regarded by Dr. Duncan as too large. Dr. Duncan considers 80 lbs. as the maximum force ever employed in difficult cases. This would correspond with an hydrostatic pressure inside the uterus of 5.05 lbs. per square inch, which is greater than the uterine muscles, unaided, are capable of producing.—*Dublin Quarterly Journal Medical Sciences*.

DR. PURDON (*Journal of Cutaneous Medicine*) thinks iodide of lead ointment very useful in some varieties of psoriasis, in tinea circinata and in acrofulous affections.

Medical Miscellany.

TUBERCULOSIS AND CANCER.—The correlation of these diseases has been for some time past the object of anxious thought on the part of medical men. Facts have so distinctly obtruded themselves on the attention of observers that the mere collection of cases will go far to establish a relationship between tuberculosis and cancer. Among the most intelligent physicians who have clinically studied the subject is Dr. Burdell, of Vierzion, in France. On the 17th of May last he read a paper before the Academy of Medicine of Paris, in which it is stated that the diseases have been observed in more than one hundred families, both by the author and his father, to whose practice he has succeeded. It was found that parents affected with cancer had children who presented the tubercular diathesis. Dr. Burdell's memoir is remarkable, not only for the care with which the statistics were collected, but also for the sober manner in which theorizing is attempted. The facts speak so forcibly that the profession cannot fail to be struck by them. It would be well if one of our societies would next winter appoint a committee to receive reports from medical men all over the country, respecting their experience on this important subject. —*Lancet*.

NEW METHOD OF DETERMINING THE PRESENCE OF ALBUMEN IN URINE.—Meynott Tidy recommends, for the determining the presence of a small quantity of albumen, the use of phenic acid. Equal volumes of acetic and phenic acids are mixed. Observe if the addition of a drop of this mixture to water produces a precipitate. If not, the mixture can be employed to discover albumen; if, on the contrary, the test succeeds, add to the liquid acetic acid till it no longer renders water turbid. This reagent will demonstrate the existence of albumen in fifteen thousand times its volume of water, while nitric acid ceases to show albumen when it is diluted eight thousand times. —*New York Medical Journal*.

ACTION OF DIGITALINE UPON THE MOVEMENTS OF THE HEART. (MEYER).—The author draws a new theory of the action of digitalis upon the movements of the heart from his experiments upon dogs. After the injection of from 18 to 36 milligrammes of digitaline into the veins, the pulse diminishes in frequency, while the arterial pressure is considerably augmented, whence the author infers that the retardation of the pulse is the consequence of the increased arterial tension which produces an excitation of the encephalic origins of the vagus nerve.

Meyer explains the augmentation of the sanguine pressure by the specific action of digitaline upon the cardiac muscle. Now it is known that in intoxication from digitalis, the heart remains tetanized after death. The muscular labor of the heart becoming more active, the arterial tension is increased in the whole circulatory system. —*Jahresbericht*, 1870, B. 1. Abth. 1. —*Lyon Medical*.

POISON IN SNUFF.—Dr. Garrod lately lectured at King's College on a case of lead-poisoning in

which the mineral was taken in snuff. It was rappee that the patient habitually took, and the damp snuff packed in the usual lead cases converted some into carbonate. The symptoms were serious, and with difficulty traced to their real source. Then several packages were purchased and found to be contaminated with the poison. Snuff-takers would do well to take this important lesson to heart, and the profession is hereby reminded of the subtle manner in which lead is apt to be conveyed into the system where in time it is sure to give rise to its injurious effects. —*Dublin Press and Circular*.

TO CORRESPONDENTS.—Communications accepted.—An Instance of a so-called Endless Nerve.—Report on the Hospital for the Ruptured and Cripple, New York.—Ready Method of Cranial Comparison.—Surgical Cases at the Boston City Hospital.—Case of a Foreign Body remaining four years in the Lung.

BOOKS AND PAMPHLETS RECEIVED.—Satan in Society. By a Physician. C. F. Vent: Cincinnati and New York. Pp. 412.—Transactions of the American Ophthalmological Society. Seventh Annual Meeting, Newport, July, 1870. (From Dr. H. D. Noyes, Recording Secretary.) Pp. 151.—Transactions of the Wisconsin State Medical Society, 1870. Pp. 131. (From Dr. H. P. Strong, President).—The New York Observer Year-book and Almanac for 1871. Pp. 200. Price \$1.

Deaths in eighteen Cities and Towns of Massachusetts for the week ending Jan. 14, 1871.

Cities and towns.	Total.	Consumption.	Prevalent Diseases.	Scarlet Fever.
Boston . . .	116	11	14	4
Charlestown 10		1	3	2
Worcester . .	10	6	2	1
Lowell . . .	28	3	1	3
Milford . . .	2	0	0	0
Chelsea . . .	7	1	0	0
Cambridge . .	9	1	0	1
Salem . . .	9	1	1	0
Lawrence . .	7	0	0	1
Springfield .	3	2	0	0
Lynn . . .	11	4	2	0
Fitchburg . .	4	2	0	0
Taunton . .	7	0	0	3
Newburyport .	9	3	1	0
Somerville . .	4	1	5	2
Fall River . .	11	1	5	2
Haverhill . .	2	0	0	0
Holyoke . . .	7	1	1	0
265	38	81	18	11

Seven deaths from croup and diphtheria occurred in all the above-named places. Holyoke reports eight deaths from smallpox in the past two weeks; the deaths of the last week (four) were all of young children.

GEORGE DERRY, M.D.,
Secretary of State Board of Health.

DEATHS IN BOSTON for the week ending Saturday, Jan. 14th, 116. Males, 53; females, 63. Abcesses, 1—apoplexy, 2—aneurism, 1—disease of the bladder, 1—inflammation of the bowels, 3—bronchitis, 1—congestion of the brain, 1—disease of the brain, 6—burned, 1—cancer, 4—canker, 1—cerebro-spinal meningitis, 1—cyanosis, 1—consumption, 11—convulsions, 3—debility, 6—dropsy, 1—dropsy of brain, 5—drowned, 1—diphtheria, 3—epilepsy, 1—erysipelas, 1—scarlet fever, 4—typhoid fever, 4—disease of heart, 2—hemorrhage, 1—intemperance, 3—disease of the kidneys (Bright's), 2—disease of the liver, 1—congestion of the lungs, 3—inflammation of the lungs, 11—marasmus, 2—old age, 5—paralysis, 3—pleurisy, 1—premature birth, 1—puerperal diseases, 4—rheumatism, 1—scrofula, 2—smallpox (Gallop's Island), 1—tetanus, 1—unknown, 6.

Under 5 years of age, 40—between 5 and 20 years, 12—between 20 and 40 years, 21—between 40 and 60 years, 22—above 60 years, 20. Born in the United States, 74—Ireland, 29—other places, 13.